

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A method comprising:

issuing ~~an~~ a first instruction ~~selected~~ from a queue;
in response to detecting a blocking condition that prevents the first instruction from being completed, determining whether the blocking condition is a non-transient blocking condition or a transient blocking condition, a transient blocking condition having a shorter duration relative to a non-transient blocking condition;

in response to the blocking condition being a non-transient blocking condition,

enqueueing the first instruction ~~issued~~ within a recirculation queue,[[;]]

~~selectively~~ setting a state of the first instruction in the recirculation queue to ~~one of~~ a blocked state to prevent the first instruction from being reissued from the recirculation queue; and if completion of the instruction is prevented by a first detected blocking condition and

in response to detecting that the non-transient blocking condition no longer exists, changing the state of the first instruction in the recirculation queue to an unblocked

state to permit the first instruction to be reissued from the recirculation queue; and ~~if completion of the instruction is prevented by a second detected blocking condition,~~

in response to the blocking condition being a transient blocking condition,

enqueueing the first instruction within the recirculation queue, and

setting the state of the first instruction in the recirculation queue to the unblocked state to permit the first instruction to be reissued from the recirculation queue,

wherein the blocking condition corresponds to a hazard in which the first instruction cannot execute until completion of a second instruction issued prior to the first instruction

~~wherein the first detected blocking condition corresponds to a first data hazard, and~~

~~wherein the second detected blocking condition corresponds to a second data hazard; and~~

~~reissuing the instruction from the recirculation queue if a third detected blocking condition of at least one instruction within the recirculation queue, other than the instruction, is satisfied.~~

2. (Currently Amended) The method of claim 1, wherein issuing the first instruction from the queue comprises:

arbitrating between a plurality of queues to select [[a]]
the queue;

selecting a current instruction from the queue ~~selected~~;
and

issuing the current instruction ~~for~~ from the queue
~~selected~~.

3. (Currently Amended) The method of claim 2, wherein issuing
the current instruction comprises:

determining a state of the current instruction; and
if the state of the current instruction is blocked, then
selecting an alternate queue from the plurality of
queues, and ~~if the state of the instruction is blocked; and~~
issuing an instruction ~~selected~~ from the alternate
~~selected~~ queue.

4. (Currently Amended) The method of claim 1, wherein
enqueueing the first instruction within the recirculation queue
comprises:

~~detecting a blocking condition that corresponds to the~~
~~first detected blocking condition prohibiting the instruction~~
~~issued from completion;~~

placing the first instruction within the recirculation
queue; and

~~setting the state of the instruction as blocked to prohibit
reissue of the instruction; and~~

storing the ~~first detected~~ blocking condition.

5. (Currently Amended) The method of claim 1, further comprising:

identifying blocking conditions of instructions within the recirculation queue;

determining whether any blocking condition of any instruction within the recirculation queue is satisfied; and

enabling ~~recirculation~~ reissuance of a given instruction ~~instructions~~ from the recirculation queue by setting the state of each the given instruction within the recirculation queue to the unblocked state if ~~any~~ the blocking condition associated with the given instruction is satisfied.

6. (Cancelled)

7. (Currently Amended) The method of claim 1, ~~wherein~~ ~~enqueueing comprises~~ further comprising:

~~determining whether one of the first and second detected
blocking conditions preventing the instruction issued from
completion is a transient blocking condition;~~

in response to enqueueing the first instruction in the recirculation queue due to the blocking condition being a transient blocking condition,

~~setting the state of the instruction to the unblocked state if the one of the first and second detected blocking conditions is transient; and~~

resetting a state of each ~~instruction~~ all other instructions within the recirculation queue to the unblocked state.

8. (Cancelled)

9. (Currently Amended) The method of claim 1, wherein the hazard corresponds to a data hazard or a resource hazard ~~one of the first and second detected blocking conditions is one of a data blocking condition and a resource blocking condition.~~

10. (Original) The method of claim 1, wherein the recirculation queue is a first in, first out circular queue.

11. (Currently Amended) An article of manufacture including a machine readable storage medium having computer executable instructions tangibly stored thereon ~~instructions~~

~~which may be used to program a system to perform a method, the~~
instructions for comprising:

issuing ~~an~~ a first instruction ~~selected~~ from a queue;

in response to detecting a blocking condition that prevents
the first instruction from being completed, determining whether
the blocking condition is a non-transient blocking condition or
a transient blocking condition, a transient blocking condition
having a shorter duration relative to a non-transient blocking
condition;

in response to the blocking condition being a non-transient
blocking condition,

enqueueing the first instruction ~~issued~~ within a
recirculation queue, [[;]]

~~selectively~~ setting a state of the first instruction
in the recirculation queue to ~~one of~~ a blocked state to prevent
the first instruction from being reissued from the
recirculation queue; and if completion of the instruction is
prevented by a first detected blocking condition and

in response to detecting that the non-transient
blocking condition no longer exists, changing the state of the
first instruction in the recirculation queue to an unblocked
state to permit the first instruction to be reissued from the
recirculation queue; and if completion of the instruction is
prevented by a second detected blocking condition,

in response to the blocking condition being a transient
blocking condition,

enqueueing the first instruction within the
recirculation queue, and

setting the state of the first instruction in the
recirculation queue to the unblocked state to permit the first
instruction to be reissued from the recirculation queue,

wherein the blocking condition corresponds to a hazard in
which the first instruction cannot execute until completion of a
second instruction issued prior to the first instruction

~~wherein the first detected blocking condition~~
~~corresponds to a first data hazard, and~~

~~wherein the second detected blocking condition~~
~~corresponds to a second data hazard; and~~

~~reissuing the instruction from the recirculation~~
~~queue if a third detected blocking condition of at least one~~
~~instruction within the recirculation queue, other than the~~
~~instruction, is satisfied.~~

12. (Currently Amended) The article of manufacture of claim
11, wherein issuing the first instruction from the queue
comprises:

arbitrating between a plurality of queues to select a the
queue;

selecting a current instruction from the queue ~~selected~~;
and

issuing the current instruction from the queue ~~selected~~.

13. (Currently Amended) The article of manufacture of claim 12, wherein issuing the current instruction comprises:

determining a state of the current instruction; and

if the state of the current instruction is blocked, then

selecting an alternate queue from the plurality of queues, and ~~if the state of the instruction is blocked, and~~

issuing an instruction ~~selected~~ from the alternate ~~selected~~ queue.

14. (Currently Amended) The article of manufacture of claim 11, wherein enqueueing the first instruction within the recirculation queue comprises:

~~detecting the first detected blocking condition~~
~~prohibiting the instruction issued from completion;~~

placing the first instruction within the recirculation queue; and

~~setting the state of the instruction as blocked to~~
~~prohibit reissue of the instruction; and~~

storing the ~~first detected~~ blocking condition.

15. (Currently Amended) The article of manufacture of claim 11, wherein the ~~method~~ machine readable storage medium further comprises instructions for:

identifying blocking conditions of instructions within the recirculation queue;

determining whether any blocking condition of any instruction within the recirculation queue is satisfied; and

enabling ~~reissuing~~ reissuance of a given instruction ~~instructions~~ from the recirculation queue by setting a state of ~~each~~ the given instruction within the recirculation queue to the unblocked state if ~~any~~ the blocking condition associated with the given instruction is satisfied.

16. (Cancelled)

17. (Previously Presented) The article of manufacture of claim 11, wherein ~~enqueueing~~ the machine readable storage medium further comprises instructions for:

~~determining whether at least one of the first and second detected blocking conditions preventing the instruction issued from completion is a transient blocking condition;~~

in response to enqueueing the first instruction in the recirculation queue due to the blocking condition being a transient blocking condition,

~~setting the state of the instruction to the unblocked state if the at least one of the first and second detected blocking condition is transient, and~~

resetting a state of all other instructions each ~~instruction~~ within the recirculation queue to the unblocked state.

18. (Cancelled)

19. (Currently Amended) The article of manufacture of claim 11, wherein the hazard corresponds to a data hazard or a resource hazard ~~detected block condition is one of a data blocking condition and a resource blocking condition.~~

20. (Original) The article of manufacture of claim 12, wherein the recirculation queue is a first in, first out circular queue.

21-41. (Cancelled)

42. (New) The method of claim 1, wherein the non-transient blocking condition has a duration of 1 cycle.

43. (New) The article of manufacture of claim 11, wherein the non-transient blocking condition has a duration of 1 cycle.